



Donald C. Brittingham
Director – Spectrum Policy
Federal Relations
202-589-3785

Verizon Wireless
1300 I Street, N.W.
Suite 400 West
Washington, D.C. 20005

February 28, 2002

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
445 Twelfth Street, SW
Room: TW-A325
Washington, DC 20554

Re: **Ex Parte Meeting**
*Establishment of Rules and Policies for the Satellite Digital Audio Radio
Service in the 2310-2360 MHz Band, IB Docket No. 95-91*

Dear Mr. Caton:

On February 26, 2002, Greg Evans, Vice President – Network Architecture, and Chuck Eppert, Director – Technical Regulatory Support, of Verizon Communications, Bob Kelsch, President & CEO, Dale Branlund, Chief Technology Officer (by telephone), and Randall Schwartz, Director – Regulatory and Standards, of BeamReach Networks, and the undersigned met with Tom Sugrue, David Furth, and Ron Netro of the Wireless Telecommunications Bureau and Ed Thomas of the Office of Engineering and Technology to discuss the Commission's pending Notice of Proposed Rulemaking on SDARS terrestrial repeaters.

In this meeting, Verizon discussed its plan to use the WCS band for broadband services. Verizon believes that broadband fixed wireless technologies, such as those deployed in the WCS band, provide an excellent complement to its current strategy for delivering broadband via wired Digital Subscriber Line ("DSL") technology. Verizon believes that WCS will facilitate the economical deployment of broadband services in areas where DSL is not available while providing comparable levels of service to all of our broadband customers. In the coming months, Verizon plans to conduct a trial of its broadband fixed wireless service using the WCS band and technology/equipment developed by BeamReach Networks, Inc. Commercial deployment could begin next year depending on the results of the technical trial and the outcome of the Commission's proceeding.

BeamReach discussed its broadband wireless access ("BWA") product which employs OFDM technology with adaptive beamforming. This technology allows BeamReach to achieve significant improvements in spectral efficiency and system gain as compared to other currently available fixed wireless technologies. As a result, BeamReach's BWA systems can provide broadband services at rates equivalent to DSL to a large number of customers simultaneously in only 10 MHz of spectrum. This technology represents one of the first economically viable platforms for BWA in the WCS band. BeamReach noted that, in addition to providing a complement for DSL, WCS-BWA also provides a facilities-based competitive alternative to DSL.

We also discussed the potential for high-power SDARS terrestrial repeaters to cause harmful interference to WCS operations. This interference cannot be eliminated without expensive filtering in the WCS customer premises equipment ("CPE") that would make WCS-BWA deployment uneconomical. BeamReach outlined the filtering trade-offs for dealing with this potentially debilitating interference. Reiterating the analysis it presented in its ex parte comments of May 30, 2001, BeamReach reported on the feasibility and costs of additional front-end filtering in the CPE. The use of a notch filter (Q value of 750) in the CPE receiver front-end circuitry could eliminate most, though not all, of the interfering SDARS signal for A and B block WCS operators. Small exclusion zones close in to the repeaters would still be likely in the face of very high-powered repeaters. More importantly, the use of this filter would increase the cost of the CPE by \$50 (or more depending on production volumes). If this filter were added to the CPE, a more expensive power amplifier would be required to overcome the additional filter loss. This would increase the cost of the CPE by an additional \$20. In total, the inclusion of a notch filter in the CPE would increase the cost of the CPE by \$70 or more.

An incremental increase of \$70 or more in the cost of CPE is not trivial. The target cost for CPE is \$200 or less. A 35% increase in the cost of CPE would make the WCS-BWA business model uneconomical for mass broadband deployment when compared to other competitive alternatives. In comparison, some DSL modems are currently selling in the \$100 range, and we expect continued pressure to reduce CPE prices in this market. The combination of high filter costs and the lack of access to 100% of the potential broadband market due to continued exclusion zones would make WCS unviable as a broadband alternative.

Importantly, the use of a notch filter would not in any way resolve the interference problems for C and D block licensees because it would also filter out large portions of the C and D bands. The only way to address this problem with filters is to use narrower filters with very high Q values – e.g., a cavity filter. As it described in its May 30th filing, BeamReach investigated the feasibility and cost of a cavity filter with a resonator Q of about 15,000. Use of this filter could provide very high attenuation across the SDARS band, but they would add approximately \$1,500 to the cost of the CPE in high volumes. The physical dimensions of such a filter (8" x 6" x 2") are also impractical for use in WCS CPE.

Mr. William F. Caton

February 28, 2001

Page 3

Previously, Verizon and BeamReach have recommended that the power of SDARS terrestrial repeaters be capped at 2 kW – the power limit that applies to WCS licensees. More recently, we have joined other WCS proponents in proposing a power flux density (“PFD”) limit that would allow SDARS licensees to operate repeaters at higher power levels while providing necessary protection to WCS. This proposal may represent a more flexible approach for accommodating both SDARS and WCS than that afforded by a strict power cap.

Verizon and BeamReach urge the Commission to adopt appropriate technical limits to ensure that WCS is not subject to interference from SDARS terrestrial repeaters that will preclude the economical deployment of an important broadband fixed wireless service. Please include a copy of this ex parte presentation in the record for the above captioned proceeding. If you have any questions, you may call me on (202) 589-3785.

Respectfully submitted,

/s/
Donald C. Brittingham

Attachment

cc: Tom Sugrue
Ed Thomas
David Furth
Ron Netro